

Project Title \_\_\_\_\_

Date \_\_\_\_\_

**Storage Gas**

- |                                  |       |          |  |
|----------------------------------|-------|----------|--|
| 1. Recovery Efficiency/AFUE      | _____ | unitless | From manufacturer's literature or appliance database |
| 2. Average Hourly Pipe Heat Loss | _____ | kBtu/hr  | From Pipe Heat Loss Worksheet below                  |
| 3. Rated Input                   | _____ | kBtu/hr  | From manufacturer's literature or appliance database |
| 4. Effective AFUE                | _____ | unitless | Line 1 - (Line 2 ÷ Line 3)                           |

**Storage Electric**

- |                                  |       |          |   |
|----------------------------------|-------|----------|---|
| 1. Average Hourly Pipe Heat Loss | _____ | kBtu/hr  | From Pipe Heat Loss Worksheet below                     |
| 2. Rated Input                   | _____ | kW       | From manufacturer's literature or appliance database    |
| 3. Pump Watts                    | _____ | watt     | From manufacturers literature                           |
| 4. Term A                        | _____ | unitless | $1 - [\text{Line 1} \div (3.413 \times \text{Line 2})]$ |
| 5. Term B                        | _____ | unitless | $1 + [\text{Line 3} \div (1000 \times \text{Line 2})]$  |
| 6. Effective HSPF (no fan)       | _____ | Btu/watt | $3.413 \times (\text{Line 4} \div \text{Line 5})$       |
| 7. Effective HSPF (with fan)     | _____ | Btu/watt | $1.017 \div [(1 \div \text{Line 6}) + 0.005]$           |

**Heat Pump**

- |                                  |       |          |   |
|----------------------------------|-------|----------|---|
| 1. Energy Factor                 | _____ | unitless | From manufacturer's literature or appliance database  |
| 2. Average Hourly Pipe Heat Loss | _____ | kBtu/hr  | From Pipe Heat Loss Worksheet below   |
| 3. Rated Input                   | _____ | kW       | From manufacturer's literature or appliance database  |
| 4. Recovery Efficiency           | _____ | unitless | $1 \div [(1 \div \text{Line 1}) - 0.1175]$  |
| 5. Climate Zone Adjustment       | _____ | unitless | From table below  |
| 6. Effective HSPF (no fan)       | _____ | Btu/watt | $3.413 \times [(\text{Line 4} \div \text{Line 5}) - \text{Line 2} \div (3.413 \times \text{Line 3})]$ |
| 7. Effective HSPF (with fan)     | _____ | Btu/watt | $1.017 \div [(1 \div \text{Line 6}) + 0.005]$   |

**Climate Zone Adjustment**

Climate Zone	Adjustment
1, 14	1.04
2, 3	0.99
4, 5, 12	1.07
6-11, 13, 15	0.92
16	1.50

**Pipe Heat Loss Rate Table**

Pipe Nominal Diameter (inches)	Insulation Thickness (inches)		
	0.5	0.75	1.0
0.50	71.6	60.9	54.2
0.75	91.1	75.8	66.6
1.00	109.9	90.1	78.8
1.50	146.7	117.5	100.3
2.00	182.9	144.3	121.7

**Pipe Heat Loss Worksheet**

(Complete this section when more than 10 feet of pipe is in unconditioned space.)

1. Description of Pipe Size and Insulation Condition	2. Pipe Heat Loss Rate (kBtu/yr•ft) <sup>1</sup>	3. Pipe Length (ft)	4. Total Pipe Heat Loss
_____	_____	× _____	= _____
_____	_____	× _____	= _____
_____	_____	× _____	= _____
_____	_____	× _____	= _____
_____	_____	× _____	= _____
5. Sum			= _____

6. Average Hourly Pipe Heat Loss (kBtu/hr) =  $\text{Sum} \div 8760 =$  \_\_\_\_\_<sup>1</sup>1. From Pipe Heat Loss Rate Table.<sup>1</sup>